Glossary

Adenosine triphosphate (ATP): Adenosine with three phosphates attached to the 5′ carbon of ribose. ATP is a coenzyme and one of the cell's energy currencies.

Adipocytes: Cells that store fats (triacylglycerols).

Adipose tissue: Type of fatty connective tissue.

ADP: Adenosine diphosphate; adenosine with two phosphates attached to the 5′ carbon of ribose.

Amphipathic: "Hating both"-a molecule with a hydrophobic region and a hydrophilic region is said to be amphipathic.

Essential fatty acid: Fatty acid that the organism needs but cannot synthesize. Linoleic and linolenic acids are essential for humans.

Ester bond: Bond formed between the hydrogen of an alcohol group and the hydroxyl of a carboxyl group by the elimination of water.

Eukaryotic: Organism whose cells contain distinct nuclei and other organelles; includes all known organisms except prokaryotes (bacteria and cyanobacteria).

Fat cells (adipocytes): Cells that store fats (triacylglycerols).

Fat: Triacylglycerol (triglyceride) that is solid at room temperature. In contrast, oils are liquid at room temperature.

Fatty acid: Carboxyl group attached to a long chain of carbon atoms with attached hydrogens.

Glucose: Hexose monosaccharide. Glucose is the commonest sugar in the blood and is the dominant cellular fuel in animals, being used in glycolysis to generate ATP and pyruvate, the latter fueling the Krebs cycle.

Glyceride: Compound formed by attaching units to a glycerol backbone. Triacylglycerols (previously called triglycerides) and phospholipids are glycerides.

Glycerol: CH_2OH-$CHOH$-CH_2OH. The backbone to which acyl groups (fatty acid chains) are attached to make triacylglycerols

and phospholipids.

Glycogen phosphorylase: Enzyme that releases glucose-1-phosphate monomers from glycogen. The glucose-1-phosphate is then converted to glucose-6-phosphate, which can be used in respiration or dephosphorylated to glucose for release into the blood.

Hydrocarbon tail: Long chain of carbon atoms with attached hydrogens found in phospholipids and triacylglycerols. The tail represents all of a molecule of fatty acid except the carboxyl group.

Hydrophilic: Molecule or part of a molecule that can interact with water.

Hydrophobic effect: Tendency of hydrophobic molecules or parts of molecules to cluster together away from water, such as hydrophobic amino acid residues in the center of a protein, or the fatty acid chains in lipid bilayers.

Hydrophobic: A molecule or part of a molecule that will associate with other hydrophobic molecules in preference to water.

Hydroxyl group: -OH group. The term is specifically *not* used for an —OH that forms part of a carboxyl group —COOH.

Lipid Bilayer: Two layers of lipid molecules that form a membrane.

Lipids: Generic name, may include lipoproteins, phospholipids, etc.

Monomer: Single unit, usually used to refer to a single building block of a larger molecule.

Nonpolar: Covalent bonds in nonpolar molecules have electrons shared equally so that the constituent atoms do not carry a charge.

Oils: Liquid at room temperature.

Polar: Having covalent bonds in which the electrons are unequally shared, so that atoms have partial charges. Polar molecules can interact with water by electrostatic interactions and by hydrogen bonding.

Polymer: Chemical composed of a long chain of identical or similar

subunits.

Saturated (of fatty acids): Containing no carbon–carbon double bonds.

Transpiration: Loss of water from plant leaves.

Triglycerides: Esters of fatty acids with glycerol (may also be mono- or di-glyceride).

***β* oxidation:** Process by which fatty acids are broken down into individual two-carbon units coupled to CoA to form acetyl-CoA. The process, which takes place in the mitochondrial matrix, generates both NADH and FADH2.